Small Business Innovation Research/Small Business Tech Transfer

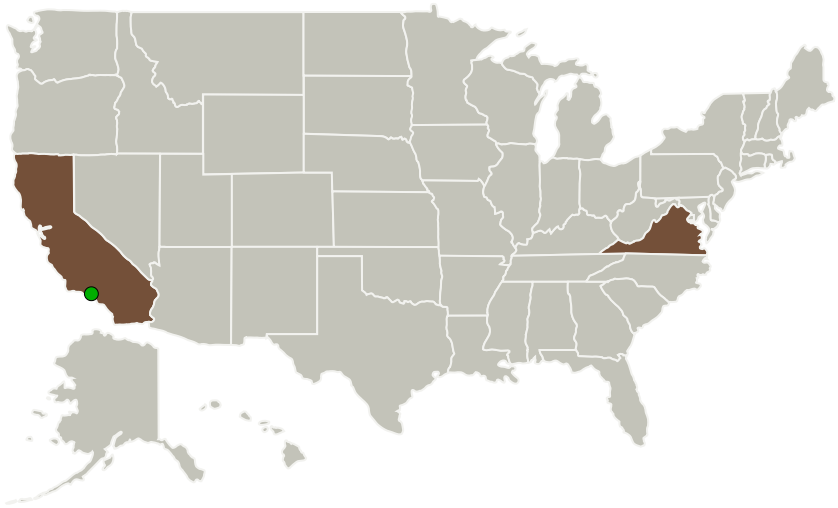
Spaceflight 2 um Tm Fiber MOPA Amplifier, Phase I

Completed Technology Project (2015 - 2015)

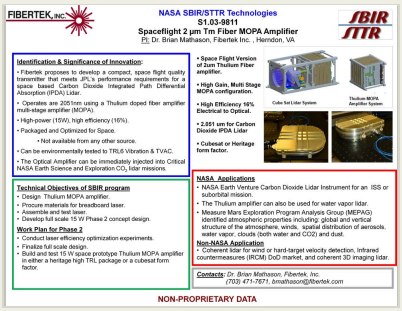
Project Introduction

Fibertek proposes to design, develop, and test a spaceflight prototype 2051 nm thulium (Tm)-doped fiber amplifier (TDFA) optical master oscillator power amplifier (MOPA) suitable for NASA spaceflight and long duration unmanned aerial vehicle (UAV) missions. The proposed spaceflight TDFA MOPA technology is new, higher efficiency, and not available from any other known source. The amplifer provides high-power, high-performance, and high-reliability continuous wave (CW) operation at 2.051 ?m. NASA and the 2007 National Research Council (NRC) Earth Science Decadal Study1 have identified carbon dioxide (CO2) light detection and ranging (lidar) as a key technology needed to address global change research. The study identifies 2 ?m laser technology as critical to CO2 studies as well as for measuring three dimensional (3D) tropospheric winds. The proposed TDFA technology also supports lidar technology needed to fill Strategic Knowledge Gaps (SKG) for Mars science, aerocapture and planetrary science sensors.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Fibertek, Inc.	Lead Organization	Industry	Herndon, Virginia
Jet Propulsion Laboratory(JPL)	Supporting Organization	NASA Center	Pasadena, California



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Primary U.S. Work Locations	
California	Virginia

Project Transitions

June 2015: Project Start

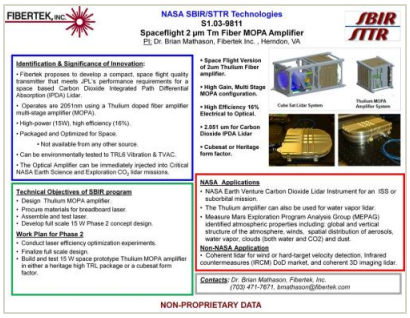
December 2015: Closed out

Closeout Summary: Spaceflight 2 um Tm Fiber MOPA Amplifier, Phase I Projec t Image

Closeout Documentation:

- Final Summary Chart Image*(https://techport.nasa.gov/file/139487)*

Images



Briefing Chart Image
Spaceflight 2 um Tm Fiber MOPA Amplifier, Phase I
(https://techport.nasa.gov/image/136583)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Fibertek, Inc.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

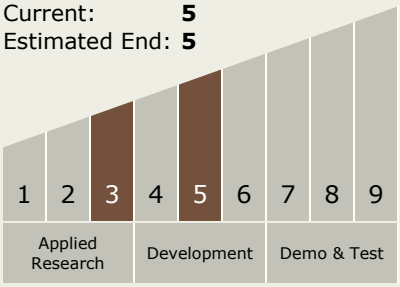
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Brian Mathason

Technology Maturity (TRL)

Start: **3**
Current: **5**
Estimated End: **5**



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Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.5 Lasers

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System